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EVALUATION OF SOUTHERN PINE BEETLE INFESTATIONS ON THE MENA AND CADDO RANGER DISTRICTS, OUACHITA NATIONAL FOREST, ARKANSAS

by

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INTRODUCTION

An aerial survey of southern pine beetle infestations was conducted on the Mena and Caddo Districts of the Ouachita National Forest during August 1977 by the Aerial Survey Team, Insect and Disease Management Unit. Subsequent ground checking was done during September 1977 by entomologists from the Pineville Field Office, Forest Insect and Disease Management Group.

There has been a beetle outbreak in Arkansas since 1969 (Ward and Drake, 1969), which seems to have reached its peak and is now declining. A suppression project has been in force since the spring of 1977. The project was based on a probable increase in southern pine beetle numbers, which could be attributed to four factors: (1) an abundance of host type in the area, (2) a large number of overstocked pine stands, (3) the presence of healthy brood in most of the infestations, and (4) widely distributed beetle spots in the area. This survey was conducted to determine the current extent of southern pine beetle damage on the districts and the potential of the infestation. The assumptions from the FY 77 project were also evaluated (1-4 above).

METHODS

Standard aerial sketch-map procedures were used for this evaluation.[2/] Aerial survey coverage was 50 percent. A total of 16 spots of red and fading pines was observed within the survey area. Only one spot was greater than five trees in size; it had 25 trees and was detected along Forest Route 912. The size and location of spots are shown on the attached maps (Figures 1 and 2).

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2/ Detection of Forest Pests in the Southeast. 1970. USDA, USFS, SA, S&PF, Div. of FPM, Publ. S&PF 7, Atlanta, GA 51 p.

RESULTS AND DISCUSSION

Results of this survey and subsequent ground checking confirmed the presence of the southern pine beetle on the Mena and Caddo Ranger Districts. These results are cumulatively summarized in Table 1. The survey data is corrected to show 100 percent area coverage. Southern pine beetle population quality was determined to be at a low level for continuing spot growth since there were very few green-infested trees. Spot size ranged from 1 to 50 trees with the single-tree class being the most prevalent.

Factors predisposing the stands to southern pine beetle attack were evident in the spots that were ground checked. All infestations on the Mena, and most of the infestations on the Caddo were the result of lightning strikes. Lightning-struck trees are highly susceptible to attack from the southern pine beetle and have been recognized for several years as an important factor in sustaining the southern pine beetle when population levels are low (Hodges and Pickard, 1971).

The Mena District is presently thinned to the point that future southern pine beetle problems should be limited to small-size spots only.

The Caddo District is also thinning overstocked stands, but there are still some stands which need treatment, yet have not received it due to accessibility or management problems. These stands are being thinned as management plans and manpower permit.

Based on the results of this survey, there is a low potential for increased southern pine beetle activity on the Mena and Caddo Districts in 1978. Factors supporting this decision include: (1) a large number of thinned stands (< 120 basal area), (2) the intermingled hardwood trees in most stands which make the switching distance from tree to tree a problem for the southern pine beetle (Hedden, 1976), (3) the lack of green infested trees in the spots checked, and (4) the district's prompt action in removing the spots which have occurred up to date. These small sales (< $2,000) are usually removed within three days after detection.

RECOMMENDATIONS

Based on observations made during the ground check, there is a low potential for the development of a southern pine beetle outbreak on the Mena and Caddo Districts. Although a southern pine beetle project is not recommended, the districts should consider continued prompt removal of lightning-struck trees. This action will help prevent large spot growth and southern pine beetle population increase. It is further recommended that the districts continue to thin overstocked stands and continue the practice of leaving

high-quality hardwoods in pine stands where specified by Unit Plans. These two practices will help prevent spot growth.

All salvage, chemical treatment, or piling and burning should be done in accordance with FSM 5250. Entomologists with FI&DM are available for consultation should they be needed.

BIBLIOGRAPHY

Hedden, R. L. 1976. Southern pine beetle spot growth and inactivity in east Texas. (Unpubl.)

Hodges, J. D. and L. S. Pickard. 1971. Lightning in the ecology of southern pine beetle, Dendroctonus frontalis (Coleoptera: Scolytidae). Can. Ent. 103:44-51.

Ward, J. D. and L. E. Drake. 1969. Southern pine beetle detection survey in Ashley County, Arkansas. USDA, For. Serv., Div. of Forest Pest Control, Pineville, LA. Rept. No. 69-2-43.

Table 1. Summary of results of southern pine beetle evaluation on the Mena and Caddo Districts, Ouachita National Forest, September 1977

	Ownership Unit
	Mena and Caddo
1. Results compiled from data collected during the aerial phase of the evaluation:	
Survey type	Aerial Sketch map
Date of aerial survey	8-18-77
Percent survey	50% (Data corrected to 100%)
Total acreage surveyed	300,000
Total acreage of Forest Service land	300,000
Susceptible host type acreage of Forest Service land	102,000
Total number of spots within the survey boundary	32
Total number of spots on Forest Service lands	32
Spots per M acre of host type Forest Service lands	.313
Average spot size (trees) Forest Service lands	3
Range of spot sizes (trees) Forest Service lands	1 to 50
Reds and faders/M acres host type on Forest Service lands	.997 trees/M acres
2. Results compiled from data collected during the ground and aerial phases of the evaluation:	
Date of ground phase	Sept. 13 - 16, 1977
Infested trees per M acre of host type Forest Service lands	.997 trees/M acres
Total number of infested trees on Forest Service lands	101.7
Total volume of infested trees on Forest Service lands	12.2 MBF
Total number of affected trees on Forest Service lands	109.38
Total volume of affected trees on Forest Service lands	13.1 MBF
Ratio of green infested to total red and fading trees	1:1.60

Volume - BF - based on Scribner decimal C log rule. Cords converted to bd. ft. based on 500 bd. ft. per cord.

■ - 2 Trees

● - >5 Trees

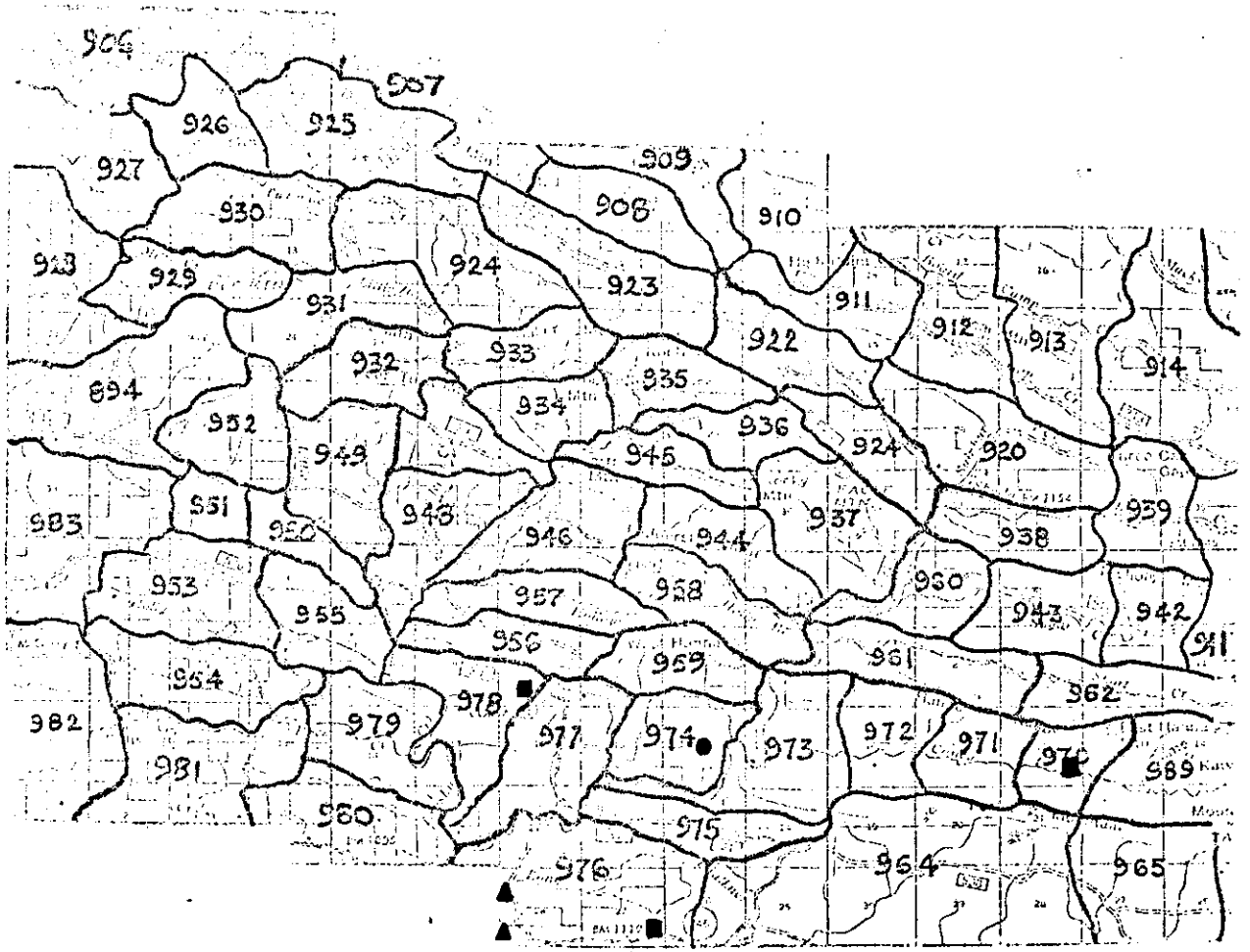

Figure 1A. Mena Ranger District, Ouachita National Forest.

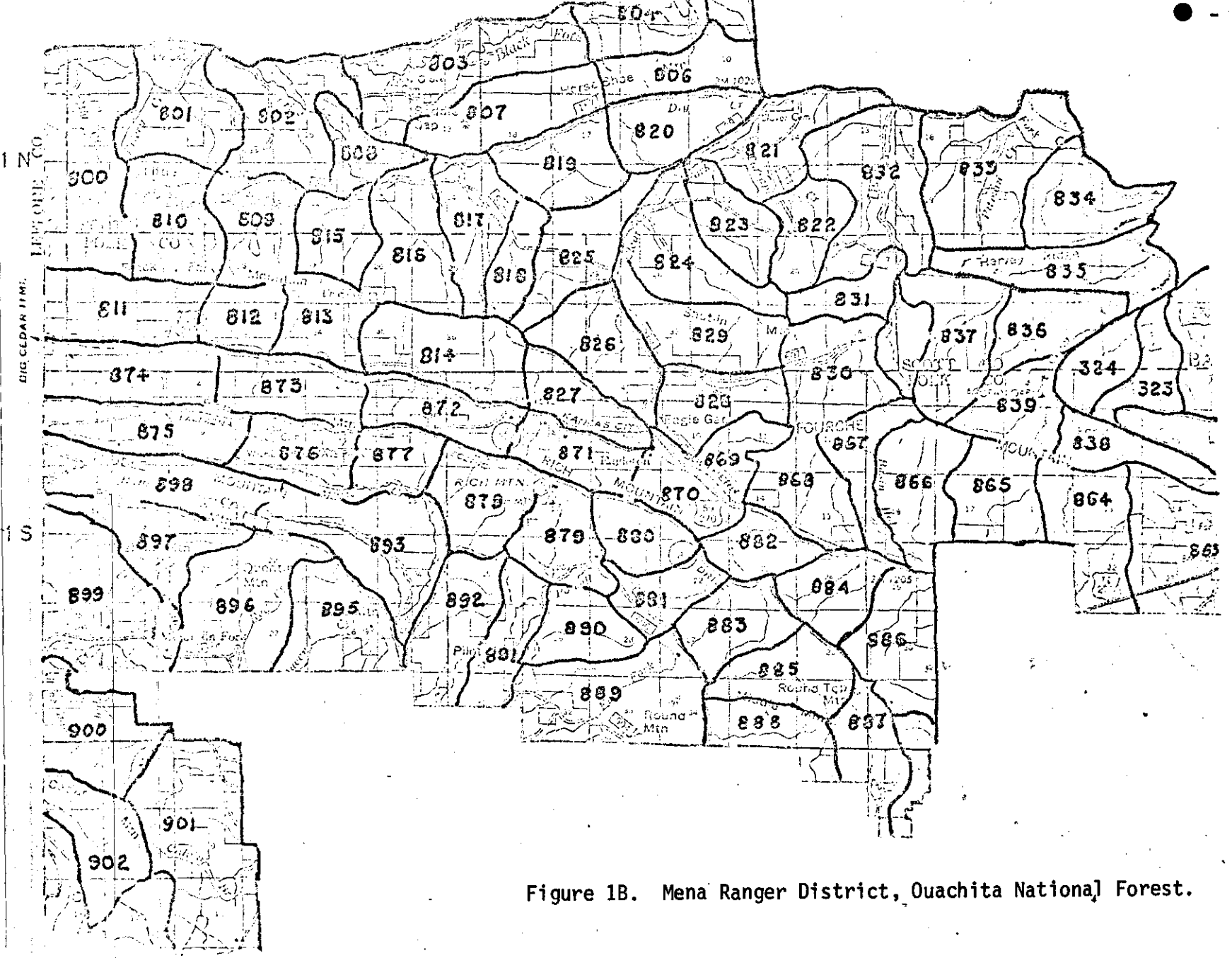

Figure 1B. Mena Ranger District, Ouachita National Forest.

▲ - Singles

■ - 2-5 Trees

● - >5 Trees

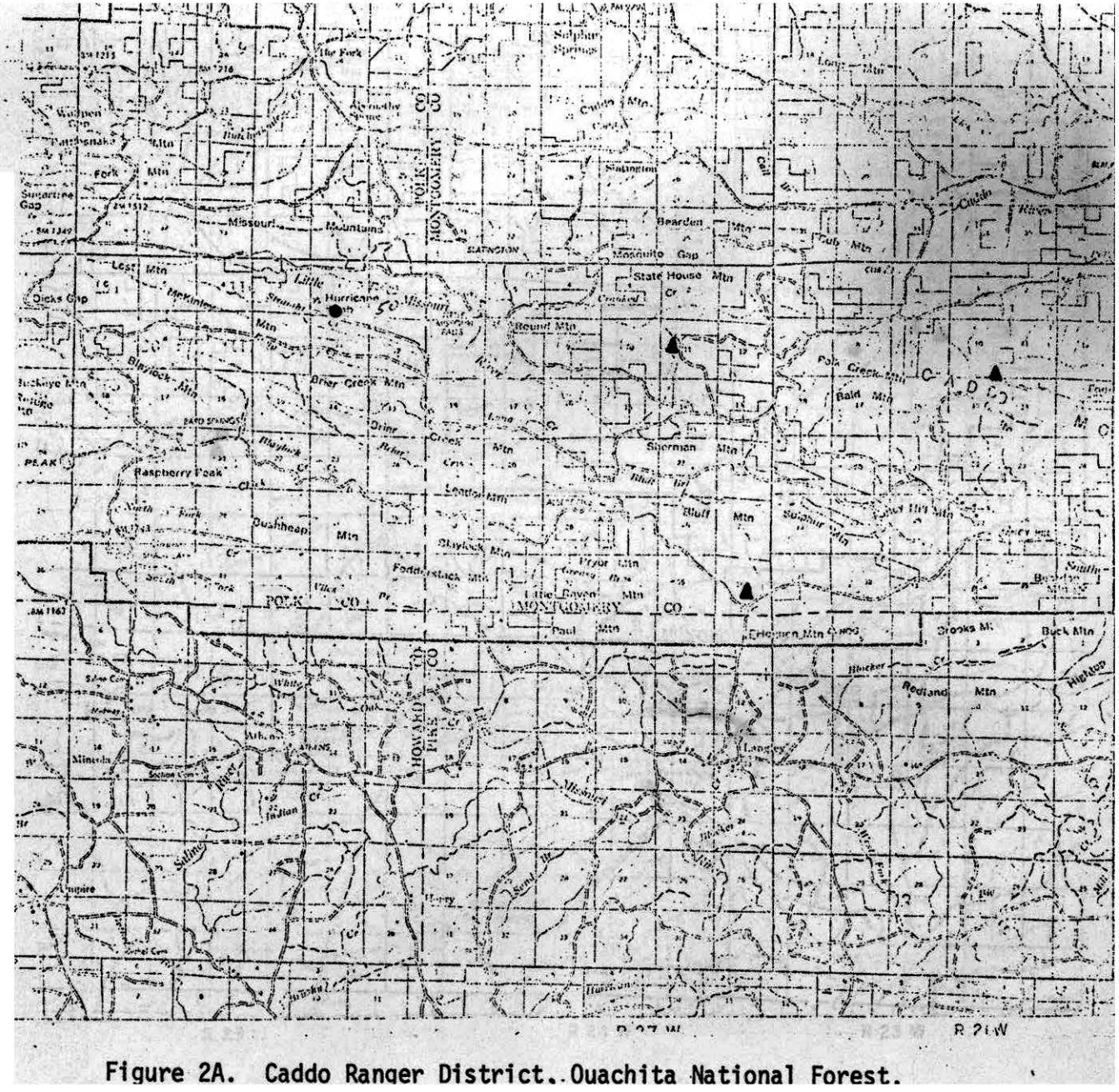

Figure 2A. Caddo Ranger District, Ouachita National Forest.

▲- Singles

■- 2-5 Trees

●- >5 Trees

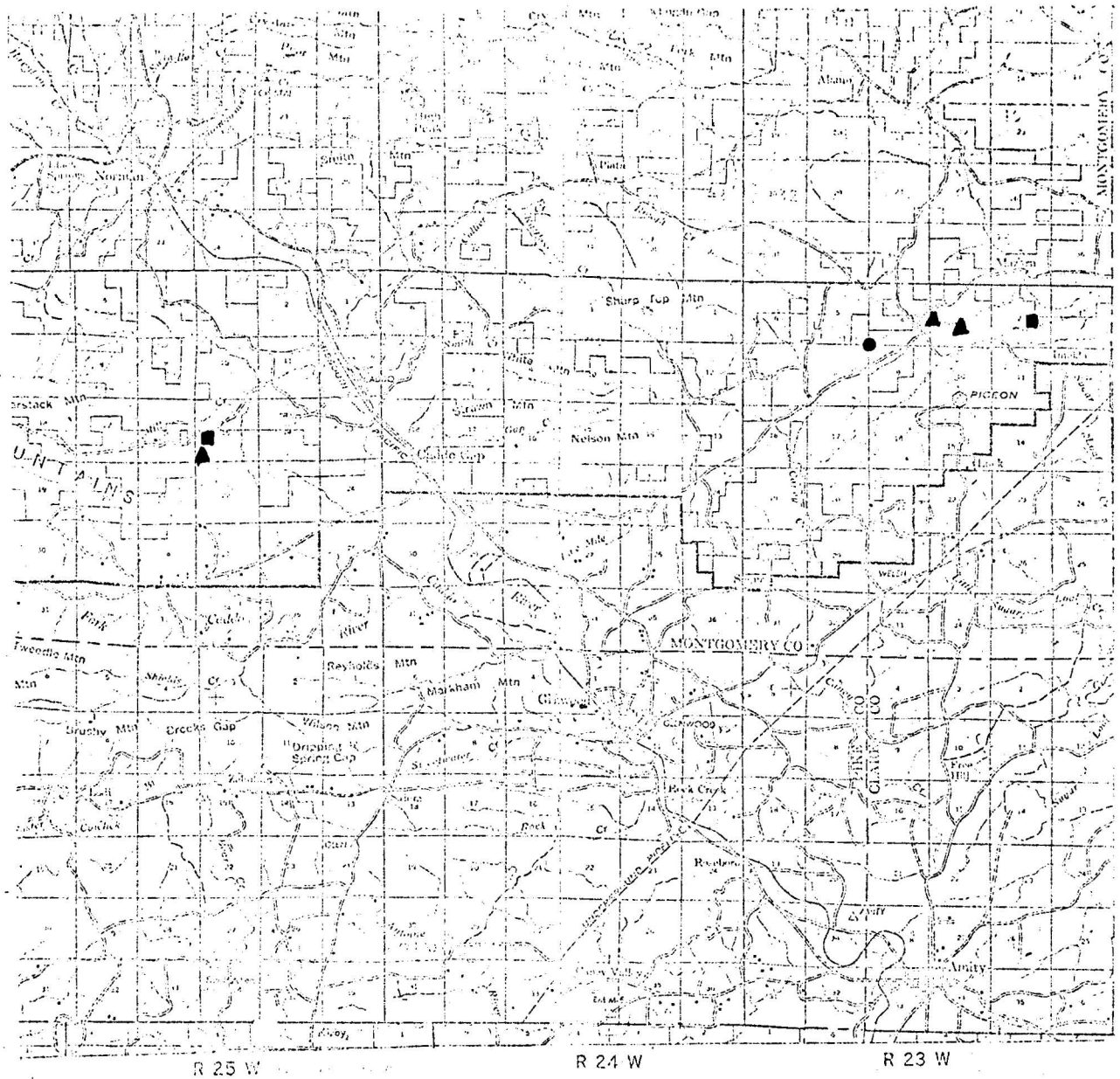

Figure 2B. Caddo Ranger District, Ouachita National Forest.

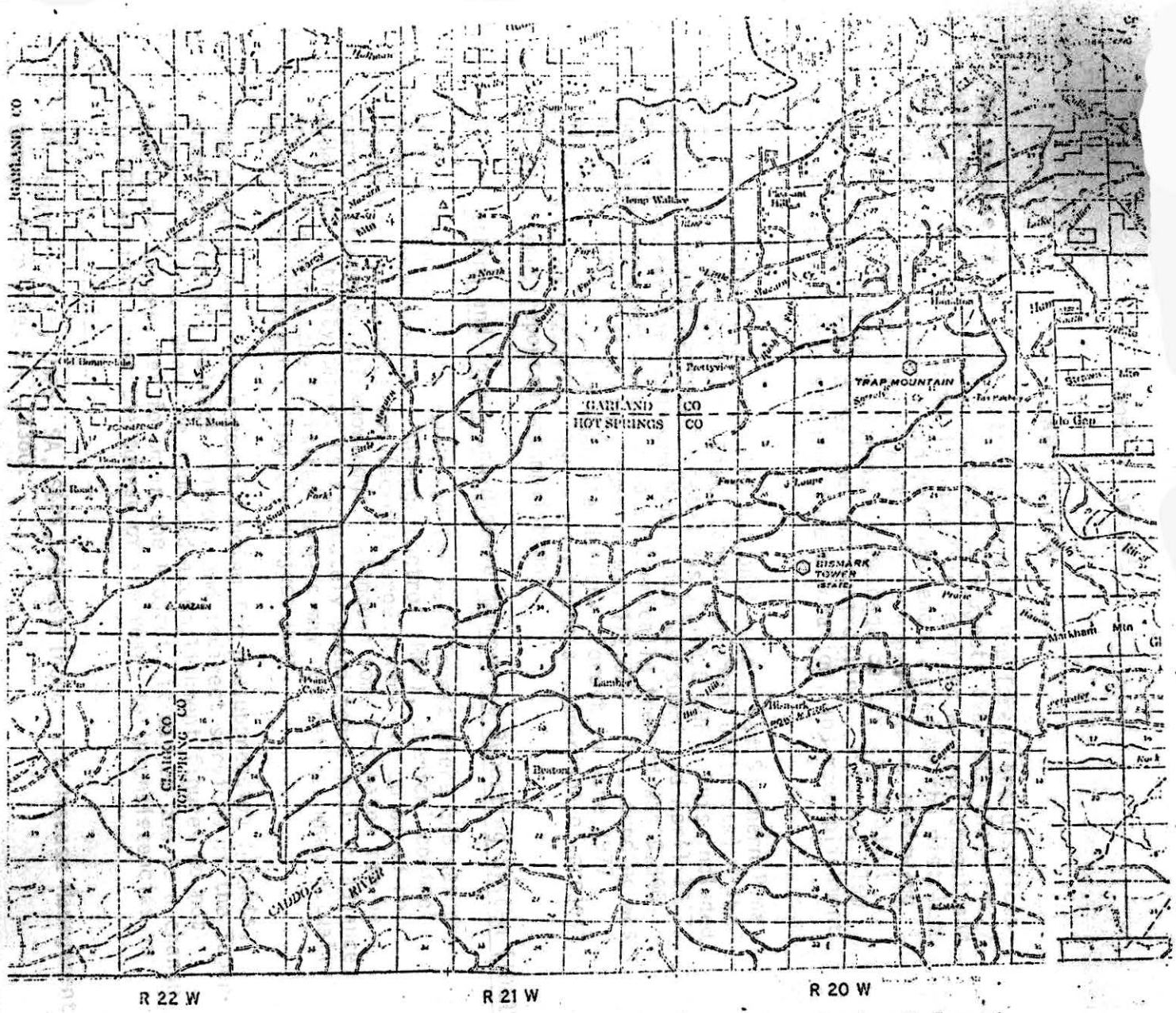

Figure 2C. Caddo Ranger District, Ouachita National Forest.

POST SUPPRESSION EVALUATION OF THE OUACHITA NATIONAL FOREST

by

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INTRODUCTION

The purpose of this evaluation is to help the forest and districts with southern pine beetle suppression projects evaluate their FY 77 project. It is an attempt to summarize reported accomplishment and to document the successes and problems encountered by the districts while doing SPB suppression work. It is hoped that by reviewing past projects, better decisions can be made concerning project planning, organizing, directing, and controlling. This may also help in future target setting, fund allocation, and accomplishment reporting.

Three districts on the Ouachita National Forest had Southern Pine Beetle Projects in FY 77, (Tiak, Caddo, and Mena Districts). The amount of salvage control targeted was 2,349.0 MBF. This included the project for the Caddo and Mena which was submitted April 1977. The number of stems targeted to be chemically treated was 9,800. The total amount of project funding was $72,028. This funding was received for use by the Ouachita National Forest in June 1977 (5200-10 dated 2/22/77). Table 1 contains a comparison of project targets versus reported accomplishments.

Target Setting and Insect and Disease Management Reporting System (IDARS) -

Project Proposals were submitted for each Forest where SPB was expected to be a problem. Salvage control (MBF), chemical control (stems), and presuppression (acres) targets were set up based on current entomological knowledge. Although some estimates can be made, SPB activity cannot be accurately predicted a year in advance. For this reason, the estimated targets may not reflect what actually happened on a forest during the project year.

The project took into account funding for presuppression flights, chemical control, salvage control, and indirect services of the Supervisor's Office. When the reported accomplishment figures do not match the targets set forth in the Project, it may be due to a change in SPB activity over the course of the year, to inconsistencies in

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Table 1. Project accomplishments as reported on IDARS

Target Areas	Tiak	Mena	Caddo	TOTAL
Stems chemically treated	3,225	30	--	3,255
Pulp converted to MBF	1.91844	None reported	None reported	
Salvage MBF	448.69	17.20	22.70	489.50
Presuppression acres	559,000	None reported	423,000	

Totals:	Project targets	Data as reported on IDARS
Funding*	$ 43,378	28,494
Salvage	2,349.0 MBF	489.50 MBF
Chemical treated	9,800 Stems	3,255 Stems
Presuppression acres	386,000	982,000

* Note: All figures are as reported by IDARS.

Funds turned back into the Region amount to $12,804. The funding figure in the table above represents the amount that actually was available to the districts - not the total project figure (5200-10, dated 2/22/77). Original project funding was $72,028.

accomplishment reporting, or to districts not able to get the work done. Some reasons for not accomplishing the work include inoperability, poor markets, few operators, late funding and district commitment to do the work.

Project accomplishment is reported on IDARS. These forms are designed to show how SPB control work is being accomplished on a monthly basis. If accomplishment reporting problems become apparent, FI&DM should give adequate training to insure that districts know how to report project accomplishment correctly.

Funding -

The Ouachita National Forest received funding late (June 1977) in the year. This delay caused some loss of salvage control efficiency. The districts could not use the funding to best advantage in the time that they had (June - October 1) to use it. More responsive action is needed to provide funding so that it can be used to maximum effectiveness throughout the SPB season.

Weather -

A colder than normal winter has helped to reduce the SPB to some extent. Chronic populations existed on the Mena and Caddo Districts. Most of this population was in lightning strikes. Larger populations were present on the Tiak District.

Market Conditions -

Market conditions on the Ouachita District were varied in FY 77. The Mena and Caddo Districts had a limited market for pulpwood found in the small spots. Usually one or two small volume operators handled the salvage control for each district. The Tiak District has had some problems with the pulpwood market. This has been offset by the use of chemicals to achieve control when salvage was not possible.

Operator Reliability -

Caddo - This district sold a small volume of salvage control timber. As a consequence, the District personnel have had the opportunity to observe the operators and train them as necessary. Overall operator efficiency was observed to be excellent. Very little slash was left in the woods and no merchantable material was found to be left.

Mena - This district sold mostly small volumes. Most of the salvage operators on the district were small volume business men. Usually, the spot size was three trees or less. The operators usually move

the salvage material quickly. Two spots were observed which had been salvaged. An excellent job of using merchantable material and leaving as little slash as possible was done. Overall operator efficiency was observed to be excellent.

Tiak - The Tiak District sold more salvage control volume than any other district on the National Forest. There were more operators on this district. This was probably because the average spot size salvaged was larger here than the other districts.

Personnel -

The Tiak District is the only district that had a need to hire temporary people for a chemical control crew. Delay in funding the district for SPB control contributed to less work being done than was planned.

Unit Plans -

Insect and disease prevention will be addressed in the Ouachita Timber Management Plan and Unit Plans with actual implementation scheduled to begin in FY 78.

Timber Sales -

Most of the spots were small, the sales were usually under $2,000. The Caddo and the Mena did not have a competitive market for pulpwood. Two or three operators on each district handled the majority of pulpwood salvage. These spots were usually controlled in 10 - 12 days. In larger spots (primarily Tiak District) the market was competitive, and salvage was accomplished with short notice sales. The time to control these larger spots was usually 15 - 20 working days.

Conclusion -

Late funding in FY 77 made impossible much of the planned SPB work. Breakouts have not been a problem due to the district personnel doing the post suppression checks. The overall control effort in FY 77 was satisfactory considering the time from funding to job completion (4 months).

It should be noted here that the success of a SPB control project is determined by the Post Control checks. Districts which make the effort to do this properly greatly increase the efficiency of their work. Preventative measures will be initiated in FY 78 as specified by Unit and Timber Management Plans.

The IDARS reporting form is used to provide data concerning the project. Accurate reporting is necessary in order to keep abreast of what is actually happening on each project district. FI&DM will

give training sessions as needed to insure that the people responsible for reporting on the IDARS form understand the IDARS system. This will also help to minimize errors on future reports.

As Unit Plans are formulated, FI&DM is available to assist in planning for long term insect and disease management. This planning is essential for the implementation of preventative measures. It is also desirable when direct control of Forest pests must be considered for sensitive areas (campgrounds, etc.).

It should be noted here that the success of a SPB control effort depends on the post suppression check. Districts which make the effort to do this properly greatly increase the efficiency of their work.